Title: Argument
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Identification of the Case
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Contents of Argument
Reasons:

1. The Examiner cited the following publications to demonstrate that the inventions of the present application could be easily made based on the inventions disclosed by these publications by a person skilled in the art and concluded that they are unpatentable in accordance with Paragraph 2 of Article 29 of the Patent Law:

   Reference 1: Japanese Unexamined Patent Publication No.083899/1982
   Reference 2: Japanese Unexamined Patent Publication No. 022925/1992
   Reference 3: Japanese Unexamined Patent Publication No. 014917/1992

2. As a result of careful examination of the above publications, the applicant decides to make an amendment to the specification in the form of a written amendment which the applicant files along with this argument. This amendment clarifies the features of the inventions of the present application.
   The amendment includes a modification which further limits the invention described in Claim 1 and an additional claim dependent on Claim 1, as Claim 2. In addition, we submit an amended version of the original Claim 2 as a new Claim 3 and also add a new claim dependent on the new Claim 3, as Claim 4.

   If you accept this amendment, we think that clearly the amended inventions cannot be made easily based on the inventions disclosed in the above publications. We hope you will examine them and make a decision to acknowledge their patentability.

3. The invention claimed in the new Claim 1 is as follows:

"An optical transmitter which multiplexes an optical data signal and an optical supervisory signal and transmits them, comprising:

an optical amplifier which consists of an optical fiber for amplifying said optical data signal and an exciting light source for outputting exciting light which goes into said optical fiber and gives a gain to said optical fiber;

a monitor which detects the output value of said optical data signal amplified by said optical amplifier, makes a decision on a fault in said optical amplifier according to said output value, and transmits said fault information as said optical supervisory signal with a wavelength of approximately 1.48 μm; and,

a multiplexer which multiplexes said optical data signal outputted from said optical amplifier and said optical supervisory signal outputted from said monitor;

wherein said optical supervisory signal includes control information for a device connected at a subsequent stage."

This realizes a device which monitors an optical transmission line and transmits an optical supervisory signal without an output power drop during amplification of an optical data signal by an optical amplifier.

4. The invention described in Reference 1 concerns a technique that a main signal is regenerated/repeated or simply passed and a supervisory signal is regenerated/repeated after its frequency is varied from station to station. The invention described in Reference 2 concerns a technique that exciting light is modulated and thus also used as supervisory light. Reference 3 describes an invention in which, in order to control the optical amplification gain in each subsequent repeater, plural pilot signals whose frequencies are varied from repeater to repeater are superimposed and sent from both terminal stations.

5. On the other hand, as clearly indicated by the amended or new Claim 1, the received optical data signal and optical supervisory signal are first divided (demultiplexed) and then the demultiplexed optical data signal is optically amplified so that the gain of the optical data signal cannot decrease. After that, the optical data signal multiplexed with exciting light is amplified by an optical amplifier and then the amplified optical data signal is multiplexed with the optical supervisory signal and sent to an optical transmission line. Here, the wavelength of the optical supervisory signal is approximately 1.48 μm.

6. According to the Examiner, the technique that an amplified optical data signal is multiplexed with an optical supervisory signal is described in Reference 1, and it seems easy for a person skilled in the art to think of using an optical amplification technique for amplifying an optical data signal if the invention described in Reference 2 is adopted.

An object of the invention described in Reference 1 is to facilitate identification of the location of a fault between terminals. In this invention, an optical supervisory signal whose wavelength varies with the repeater between terminals is superimposed on a main signal and each supervisory signal is wavelength-divided and converted into an electric signal at the receiving end to measure the level of each signal. In other words, the purpose of multiplexing or demultiplexing a main signal and an optical supervisory signal in each repeater is to superimpose a fault search current on an optical supervisory signal.

By contrast, the invention claimed in Claim 1 offers a solution to a problem which might result from "optically amplifying" (which is not included in Reference 1). The problem refers to a phenomenon that when an optical data signal is optically amplified together with an optical supervisory signal, the gain of the optical data signal decreases, resulting in a drop in the optical data signal output power. In order to solve the problem, the present invention proposes an approach that before an optical data signal is optically amplified, the optical data signal and optical supervisory signal are divided and then after the optical data signal is amplified, it is multiplexed with .the optical supervisory signal.

In the invention described in Reference 2, exciting light has a wavelength of 1.48 μm and thus is also used as an optical supervisory signal. This is conceptually different from the invention claimed in Claim 1 that exciting light and supervisory light are separately outputted. In the invention described in Reference 2, both a main signal and an optical supervisory signal are optically amplified, which would pose the problem that the present invention is intended to solve.

On the other hand, in the invention claimed in Claim 1, an optical supervisory signal and exciting light are separate from each other; the optical data signal and exciting light enter an optical amplifier where the optical data signal is amplified; and the amplified optical data signal is multiplexed with the optical supervisory signal. In addition, the wavelength (1.48 μm) of an optical supervisory signal is out of the amplification range of the optical amplifier and such a wavelength that transmission loss of the optical supervisory signal in the optical transmission line is

virtually the same as transmission loss of the optical data signal. This produces particular effects of preventing a reduction in the gain of the optical data signal due to the optical amplifier and also a decrease in the optical signal transmission distance.

In the invention described in Reference 3, pilot signals whose frequencies are varied from repeater to repeater are transmitted in order to control the optical amplification gain in subsequent repeaters. Although this technique enables gain control for each subsequent repeater, Reference 3 has no mention of how these pilot signals are generated.

On the other hand, in the invention claimed in Claim 1, the output value of the optical data signal amplified by the optical amplifier is detected and according to the output value, a decision is made on a fault in the optical amplifier. When this fault information in the optical transmitter and a signal for controlling subsequent repeaters or other devices (for example, an optical amplifier control signal) are added to the optical supervisory signal and transmitted, subsequent optical repeaters or other devices can operate in a way to cope with a fault in the optical transmitter.

7. As mentioned above, the invention claimed in Claim 1 has a constitution and effects which are not suggested by the cited references. Therefore, we consider that even a person skilled in the art cannot easily think of making the invention claimed in Claim 1 based on the inventions described in References 1 and 2.

8. The newly added Claim 2 is dependent on Claim 1. The invention claimed in Claim 2 specifies the method of making a decision on a fault. We consider that because the invention claimed in Claim 1 meets patentability requirements, the invention claimed in Claim 2 is patentable like the invention claimed in Claim 1.

9. In addition, we consider that for the same reason that the invention claimed in Claim 1 is patentable, a person skilled in the art cannot easily think of making the invention claimed in Claim 3 based on the inventions described in References 1 to 3. We also think that the invention claimed in Claim 4 as a claim dependent on Claim 3 is patentable.

10. As we have explained above, we believe that the inventions of the present application apparently have constitutions and effects which are not suggested by the

cited references. We cordially ask you to examine them and make a decision to acknowledge their patentability.

[Necessity for proof] Needed